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RAW SEQUENCE LISTING  
 PATENT APPLICATION: US/09/662,454

DATE: 09/25/2000  
 TIME: 15:16:15

ENTERED

Input Set : A:\20264276.app  
 Output Set: N:\CRF3\09252000\I662454.raw

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3 <110> APPLICANT: Yanagi, Masayuki
4   Emerson, Susanne U.
5   Purcell, Robert H.
6   Bukh, Jens
8 <120> TITLE OF INVENTION: CLONED GENOMES OF INFECTIOUS HEPATITIS C VIRUSES AND
9   USES THEREOF
11 <130> FILE REFERENCE: 20264276US1
C--> 13 <140> CURRENT APPLICATION NUMBER: US/09/662,454
C--> 14 <141> CURRENT FILING DATE: 2000-09-14
16 <150> PRIOR APPLICATION NUMBER: US 60/053,062
17 <151> PRIOR FILING DATE: 1997-07-18
19 <150> PRIOR APPLICATION NUMBER: US 09/014,416
20 <151> PRIOR FILING DATE: 1998-01-27
22 <160> NUMBER OF SEQ ID NOS: 65
24 <170> SOFTWARE: PatentIn Ver. 2.1
26 <210> SEQ ID NO: 1
27 <211> LENGTH: 3011
28 <212> TYPE: PRT
29 <213> ORGANISM: Hepatitis C virus
31 <400> SEQUENCE: 1
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33   1           5           10           15
35 Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gln Ile Val Gly
36           20           25           30
38 Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
39           35           40           45
41 Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
42           50           55           60
44 Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly
45           65           70           75           80
47 Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
48           85           90           95
50 Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro
51           100          105          110
53 Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
54           115          120          125
56 Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu
57           130          135          140
59 Gly Gly Ala Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
60           145          150          155          160
62 Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile
63           165          170          175
65 Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Tyr
66           180          185          190
68 Gln Val Arg Asn Ser Ser Gly Leu Tyr His Val Thr Asn Asp Cys Pro
69           195          200          205
71 Asn Ser Ser Ile Val Tyr Glu Ala Ala Asp Ala Ile Leu His Thr Pro

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72      210      215      220
74 Gly Cys Val Pro Cys Val Arg Glu Gly Asn Ala Ser Arg Cys Trp Val
75 225      230      235      240
77 Ala Val Thr Pro Thr Val Ala Thr Arg Asp Gly Lys Leu Pro Thr Thr
78      245      250      255
80 Gln Leu Arg Arg His Ile Asp Leu Leu Val Gly Ser Ala Thr Leu Cys
81      260      265      270
83 Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Ser Val Phe Leu Val Gly
84      275      280      285
86 Gln Leu Phe Thr Phe Ser Pro Arg Arg His Trp Thr Thr Gln Asp Cys
87      290      295      300
89 Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met Ala Trp
90 305      310      315      320
92 Asp Met Met Met Asn Trp Ser Pro Thr Ala Ala Leu Val Val Ala Gln
93      325      330      335
95 Leu Leu Arg Ile Pro Gln Ala Ile Met Asp Met Ile Ala Gly Ala His
96      340      345      350
98 Trp Gly Val Leu Ala Gly Ile Ala Tyr Phe Ser Met Val Gly Asn Trp
99      355      360      365
101 Ala Lys Val Leu Val Val Leu Leu Phe Ala Gly Val Asp Ala Glu
102      370      375      380
104 Thr His Val Thr Gly Gly Asn Ala Gly Arg Thr Thr Ala Gly Leu Val
105 385      390      395      400
107 Gly Leu Leu Thr Pro Gly Ala Lys Gln Asn Ile Gln Leu Ile Asn Thr
108      405      410      415
110 Asn Gly Ser Trp His Ile Asn Ser Thr Ala Leu Asn Cys Asn Glu Ser
111      420      425      430
113 Leu Asn Thr Gly Trp Leu Ala Gly Leu Phe Tyr Gln His Lys Phe Asn
114      435      440      445
116 Ser Ser Gly Cys Pro Glu Arg Leu Ala Ser Cys Arg Arg Leu Thr Asp
117      450      455      460
119 Phe Ala Gln Gly Trp Gly Pro Ile Ser Tyr Ala Asn Gly Ser Gly Leu
120 465      470      475      480
122 Asp Glu Arg Pro Tyr Cys Trp His Tyr Pro Pro Arg Pro Cys Gly Ile
123      485      490      495
125 Val Pro Ala Lys Ser Val Cys Gly Pro Val Tyr Cys Phe Thr Pro Ser
126      500      505      510
128 Pro Val Val Val Gly Thr Thr Asp Arg Ser Gly Ala Pro Thr Tyr Ser
129      515      520      525
131 Trp Gly Ala Asn Asp Thr Asp Val Phe Val Leu Asn Asn Thr Arg Pro
132      530      535      540
134 Pro Leu Gly Asn Trp Phe Gly Cys Thr Trp Met Asn Ser Thr Gly Phe
135 545      550      555      560
137 Thr Lys Val Cys Gly Ala Pro Pro Cys Val Ile Gly Gly Val Gly Asn
138      565      570      575
140 Asn Thr Leu Leu Cys Pro Thr Asp Cys Phe Arg Lys His Pro Glu Ala
141      580      585      590
143 Thr Tyr Ser Arg Cys Gly Ser Gly Pro Trp Ile Thr Pro Arg Cys Met
144      595      600      605

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146 Val Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys Thr Ile Asn Tyr
147      610      615      620
149 Thr Ile Phe Lys Val Arg Met Tyr Val Gly Gly Val Glu His Arg Leu
150 625      630      635      640
152 Glu Ala Ala Cys Asn Trp Thr Arg Gly Glu Arg Cys Asp Leu Glu Asp
153      645      650      655
155 Arg Asp Arg Ser Glu Leu Ser Pro Leu Leu Ser Thr Thr Gln Trp
156      660      665      670
158 Gln Val Leu Pro Cys Ser Phe Thr Thr Leu Pro Ala Leu Ser Thr Gly
159      675      680      685
161 Leu Ile His Leu His Gln Asn Ile Val Asp Val Gln Tyr Leu Tyr Gly
162      690      695      700
164 Val Gly Ser Ser Ile Ala Ser Trp Ala Ile Lys Trp Glu Tyr Val Val
165 705      710      715      720
167 Leu Leu Phe Leu Leu Leu Ala Asp Ala Arg Val Cys Ser Cys Leu Trp
168      725      730      735
170 Met Met Leu Leu Ile Ser Gln Ala Glu Ala Ala Leu Glu Asn Leu Val
171      740      745      750
173 Ile Leu Asn Ala Ala Ser Leu Ala Gly Thr His Gly Leu Val Ser Phe
174      755      760      765
176 Leu Val Phe Phe Cys Phe Ala Trp Tyr Leu Lys Gly Arg Trp Val Pro
177      770      775      780
179 Gly Ala Val Tyr Ala Leu Tyr Gly Met Trp Pro Leu Leu Leu Leu
180 785      790      795      800
182 Leu Ala Leu Pro Gln Arg Ala Tyr Ala Leu Asp Thr Glu Val Ala Ala
183      805      810      815
185 Ser Cys Gly Gly Val Val Leu Val Gly Leu Met Ala Leu Thr Leu Ser
186      820      825      830
188 Pro Tyr Tyr Lys Arg Tyr Ile Ser Trp Cys Met Trp Trp Leu Gln Tyr
189      835      840      845
191 Phe Leu Thr Arg Val Glu Ala Gln Leu His Val Trp Val Pro Pro Leu
192      850      855      860
194 Asn Val Arg Gly Gly Arg Asp Ala Val Ile Leu Leu Met Cys Val Val
195 865      870      875      880
197 His Pro Thr Leu Val Phe Asp Ile Thr Lys Leu Leu Leu Ala Ile Phe
198      885      890      895
200 Gly Pro Leu Trp Ile Leu Gln Ala Ser Leu Leu Lys Val Pro Tyr Phe
201      900      905      910
203 Val Arg Val Gln Gly Leu Leu Arg Ile Cys Ala Leu Ala Arg Lys Ile
204      915      920      925
206 Ala Gly Gly His Tyr Val Gln Met Ala Ile Ile Lys Leu Gly Ala Leu
207      930      935      940
209 Thr Gly Thr Tyr Val Tyr Asn His Leu Thr Pro Leu Arg Asp Trp Ala
210 945      950      955      960
212 His Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val Phe
213      965      970      975
215 Ser Arg Met Glu Thr Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala
216      980      985      990
218 Cys Gly Asp Ile Ile Asn Gly Leu Pro Val Ser Ala Arg Arg Gly Gln

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219          995          1000          1005
221 Glu Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser Lys Gly Trp Arg
222      1010          1015          1020
224 Leu Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu
225 1025          1030          1035          1040
227 Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu
228          1045          1050          1055
230 Gly Glu Val Gln Ile Val Ser Thr Ala Thr Gln Thr Phe Leu Ala Thr
231          1060          1065          1070
233 Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg
234          1075          1080          1085
236 Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val
237 1090          1095          1100
239 Asp Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu
240 1105          1110          1115          1120
242 Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His
243          1125          1130          1135
245 Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu
246          1140          1145          1150
248 Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro
249          1155          1160          1165
251 Leu Leu Cys Pro Ala Gly His Ala Val Gly Leu Phe Arg Ala Ala Val
252 1170          1175          1180
254 Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn
255 1185          1190          1195          1200
257 Leu Gly Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro
258          1205          1210          1215
260 Pro Ala Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr
261          1220          1225          1230
263 Gly Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly
264          1235          1240          1245
266 Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe
267 1250          1255          1260
269 Gly Ala Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr
270 1265          1270          1275          1280
272 Gly Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr
273          1285          1290          1295
275 Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile
276          1300          1305          1310
278 Ile Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly
279          1315          1320          1325
281 Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val
282 1330          1335          1340
284 Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Ser His Pro
285 1345          1350          1355          1360
287 Asn Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr
288          1365          1370          1375
290 Gly Lys Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile
291          1380          1385          1390

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293 Phe Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val
294      1395      1400      1405
296 Ala Leu Gly Ile Asn' Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser
297      1410      1415      1420
299 Val Ile Pro Thr Ser Gly Asp Val Val Val Val Ser Thr Asp Ala Leu
300      1425      1430      1435      1440
302 Met Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr
303      1445      1450      1455
305 Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile
306      1460      1465      1470
308 Glu Thr Thr Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg
309      1475      1480      1485
311 Gly Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro
312      1490      1495      1500
314 Gly Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys
315      1505      1510      1515      1520
317 Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr
318      1525      1530      1535
320 Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln
321      1540      1545      1550
323 Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile
324      1555      1560      1565
326 Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Phe Pro
327      1570      1575      1580
329 Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro
330      1585      1590      1595      1600
332 Pro Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro
333      1605      1610      1615
335 Thr Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln
336      1620      1625      1630
338 Asn Glu Val Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Thr Cys
339      1635      1640      1645
341 Met Ser Ala Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gly
342      1650      1655      1660
344 Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val
345      1665      1670      1675      1680
347 Val Ile Val Gly Arg Ile Val Leu Ser Gly Lys Pro Ala Ile Ile Pro
348      1685      1690      1695
350 Asp Arg Glu Val Leu Tyr Gln Glu Phe Asp Glu Met Glu Glu Cys Ser
351      1700      1705      1710
353 Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe
354      1715      1720      1725
356 Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg His Ala Glu
357      1730      1735      1740
359 Val Ile Thr Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu Val Phe
360      1745      1750      1755      1760
362 Trp Ala Lys His Met Trp Asn Phe Ile Ser Gly Ile Gln Tyr Leu Ala
363      1765      1770      1775
365 Gly Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala

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L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date